USPTO JC106 JUN 28 2004 PATENT & TRADEMARK OFFICE

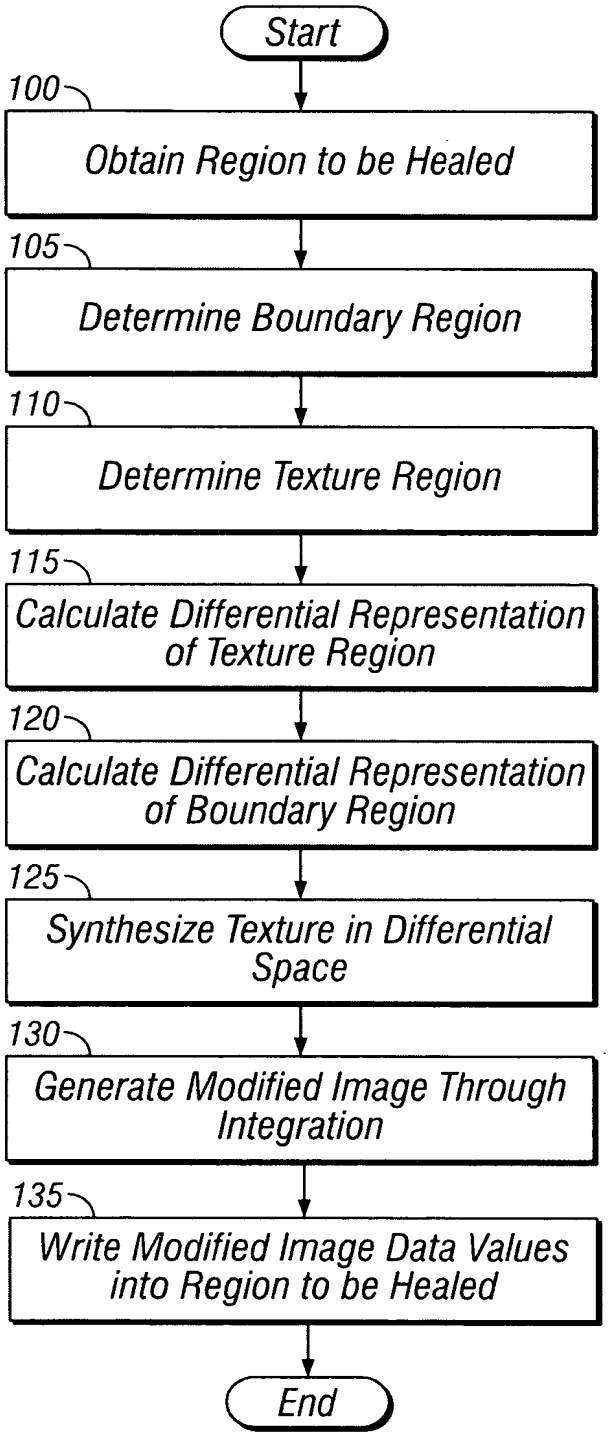

FIG. 1

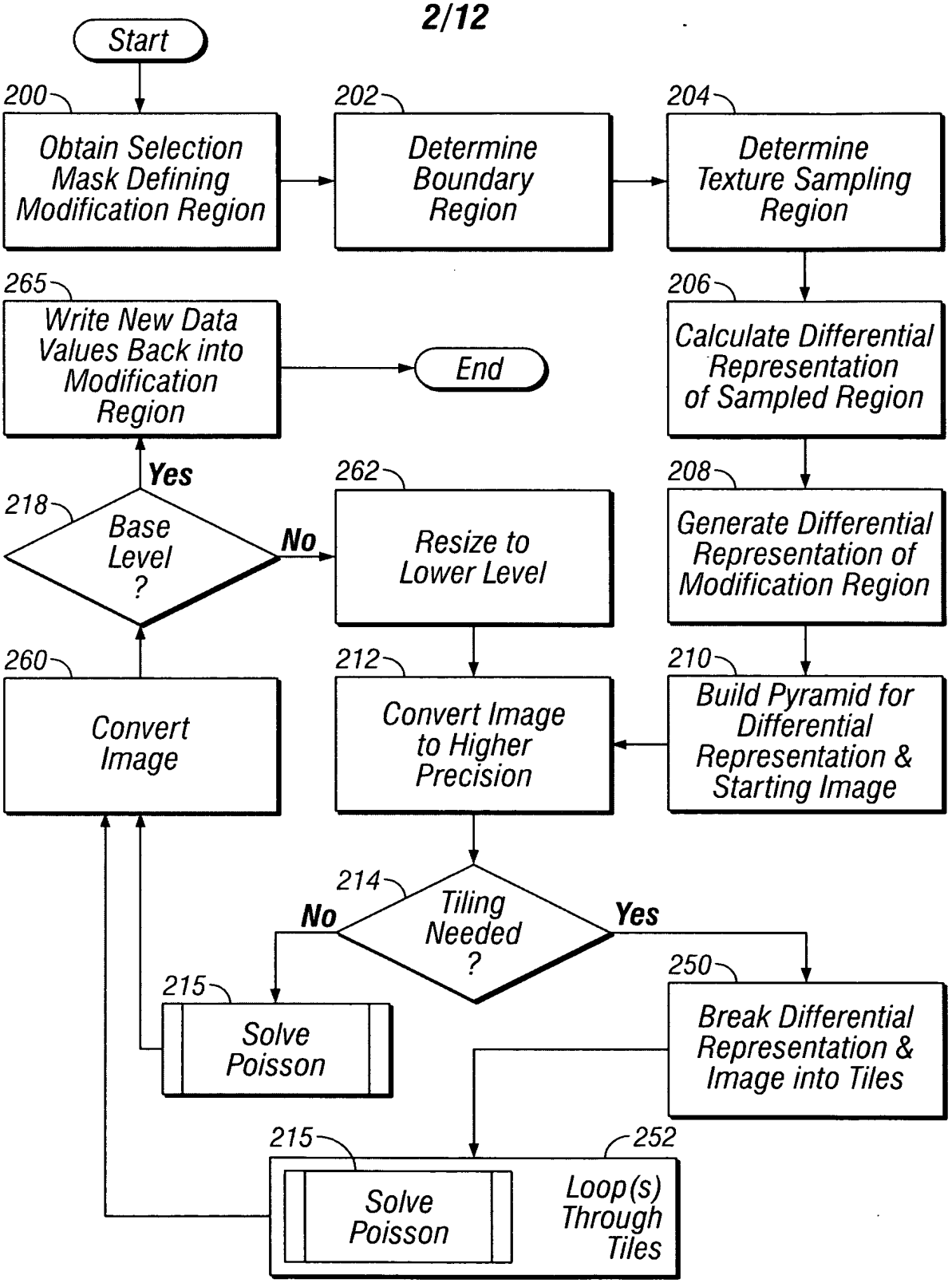
Start
200
Obtain Selection Mask Defining Modification Region
202
Determine Boundary Region
204
Determine Texture Sampling Region
206
Calculate Differential Representation of Sampled Region
208
Generate Differential Representation of Modification Region
210
Build Pyramid for Differential Representation & Starting Image
212
Convert Image to Higher Precision
214
Tiling Needed ?
No
Yes
215
Solve Poisson
250
Break Differential Representation & Image into Tiles
215
Solve Poisson
252
Loop(s) Through Tiles
260
Convert Image
218
Base Level ?
Yes
No
262
Resize to Lower Level
265
Write New Data Values Back into Modification Region
End

FIG. 2A

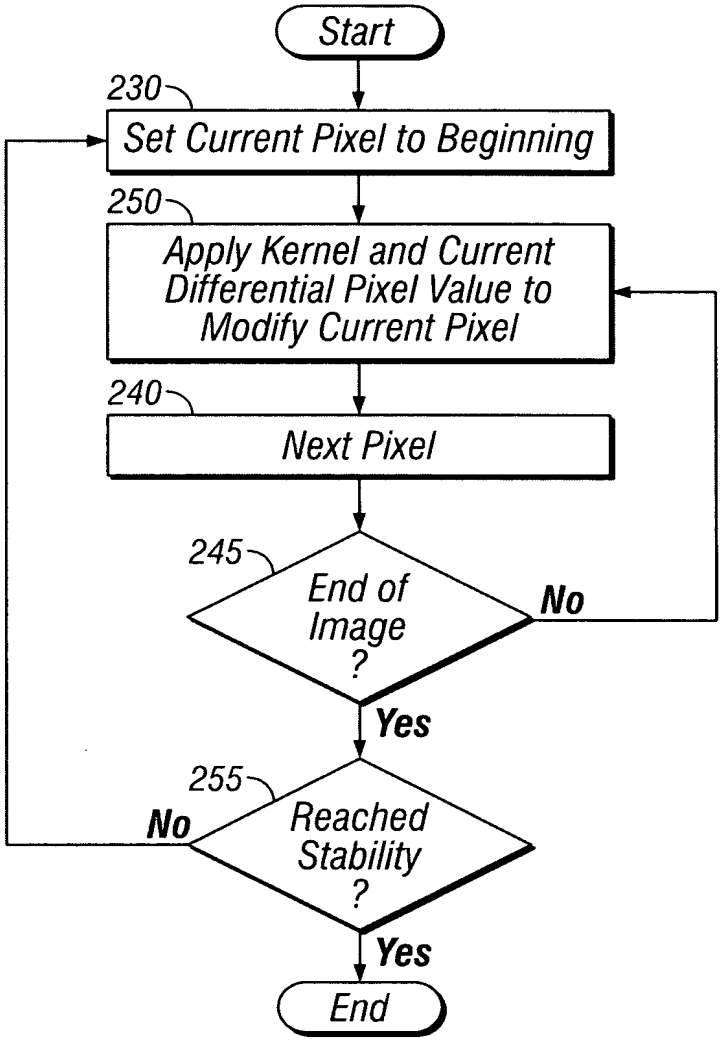
Start
230
Set Current Pixel to Beginning
250
Apply Kernel and Current Differential Pixel Value to Modify Current Pixel
240
Next Pixel
245
End of Image ?
No
Yes
255
Reached Stability ?
No
Yes
End

FIG. 2B

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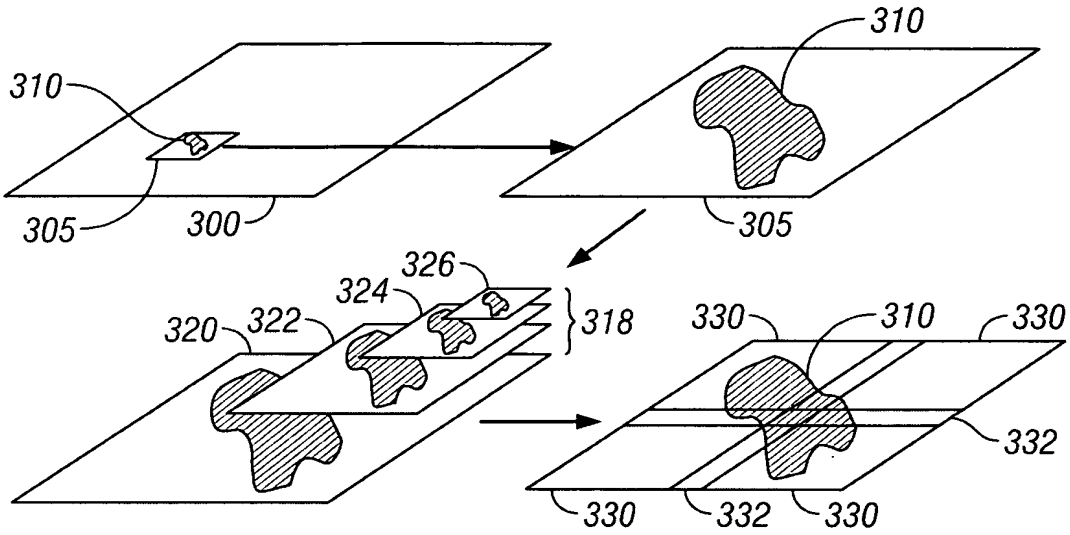

FIG. 3A

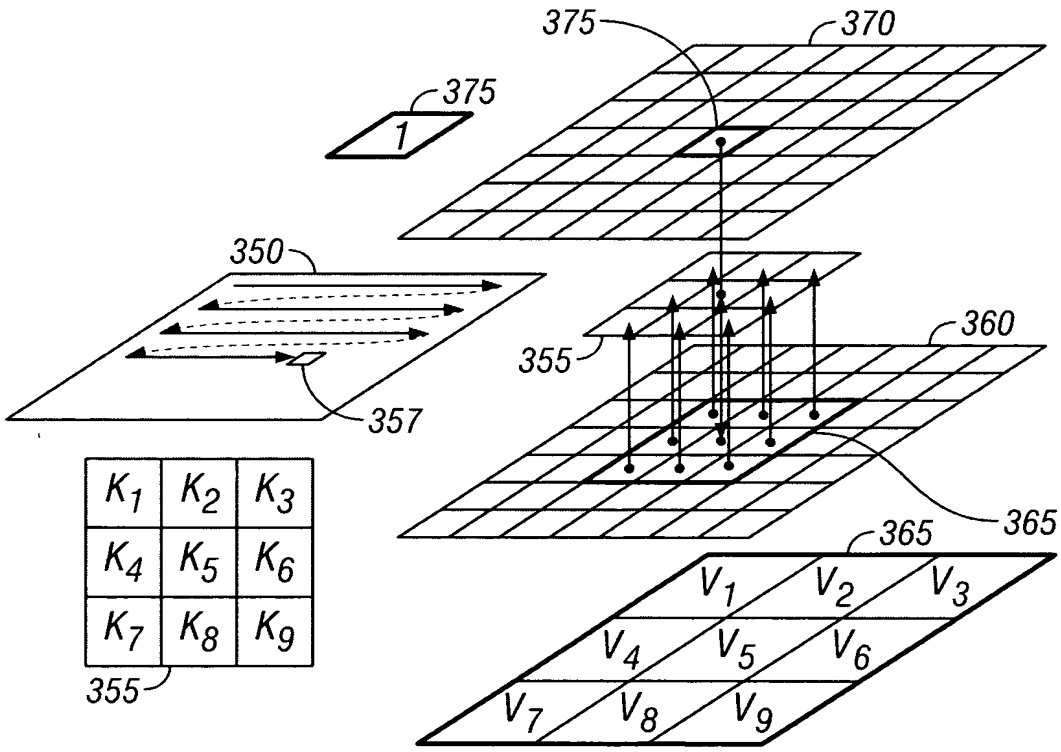

FIG. 3B

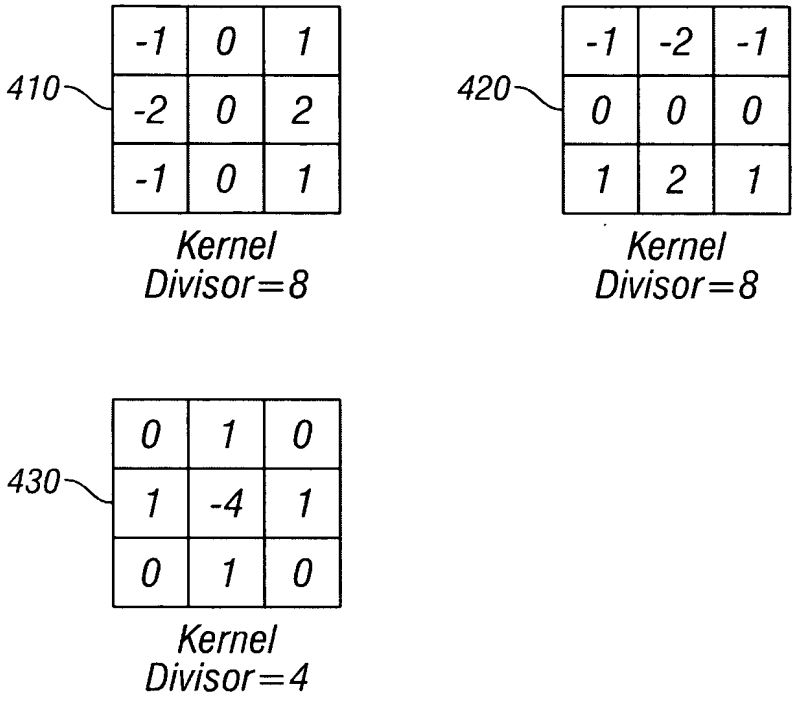
410
-1 0 1
-2 0 2
-1 0 1
Kernel
Divisor=8
420
-1 -2 -1
0 0 0
1 2 1
Kernel
Divisor=8
430
0 1 0
1 -4 1
0 1 0
Kernel
Divisor=4

FIG. 4

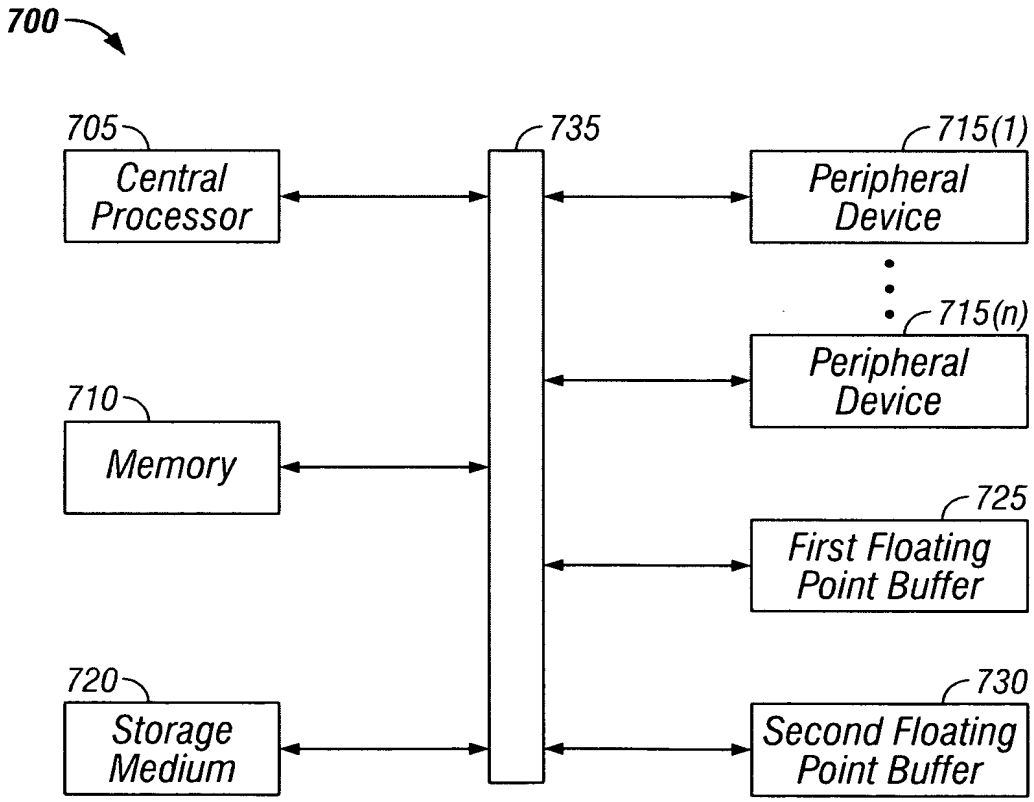
700
705
Central Processor
735
715(1)
Peripheral Device
715(n)
Peripheral Device
710
Memory
725
First Floating Point Buffer
720
Storage Medium
730
Second Floating Point Buffer

FIG. 7

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0	0	-1	0	0
0	-2	8	-2	4
-1	8	12	8	-1
0	-2	8	-2	0
0	0	-1	0	0

520

Kernel
Divisor=32

510

0	1	0
1	0	1
0	1	0

Kernel
Divisor=4

530

0	0	0	1	0	0	0
0	0	3	-12	3	0	0
0	3	-24	57	-24	3	0
1	-12	57	144	57	-12	1
0	3	-24	57	-24	3	0
0	0	3	-12	3	0	0
0	0	0	1	0	0	0

Kernel
Divisor=256

0	0	0	0	-1	0	0	0	0
0	0	0	-4	16	-4	0	0	0
0	0	-6	48	-112	48	-6	0	0
0	-4	48	-216	400	-216	48	-4	0
-1	16	-112	400	1372	400	-112	16	-1
0	-4	48	-216	400	-216	48	-4	0
0	0	-6	48	-112	48	-6	0	0
0	0	0	-4	16	-4	0	0	0
0	0	0	0	-1	0	0	0	0

540

Kernel
Divisor=2048

FIG. 5

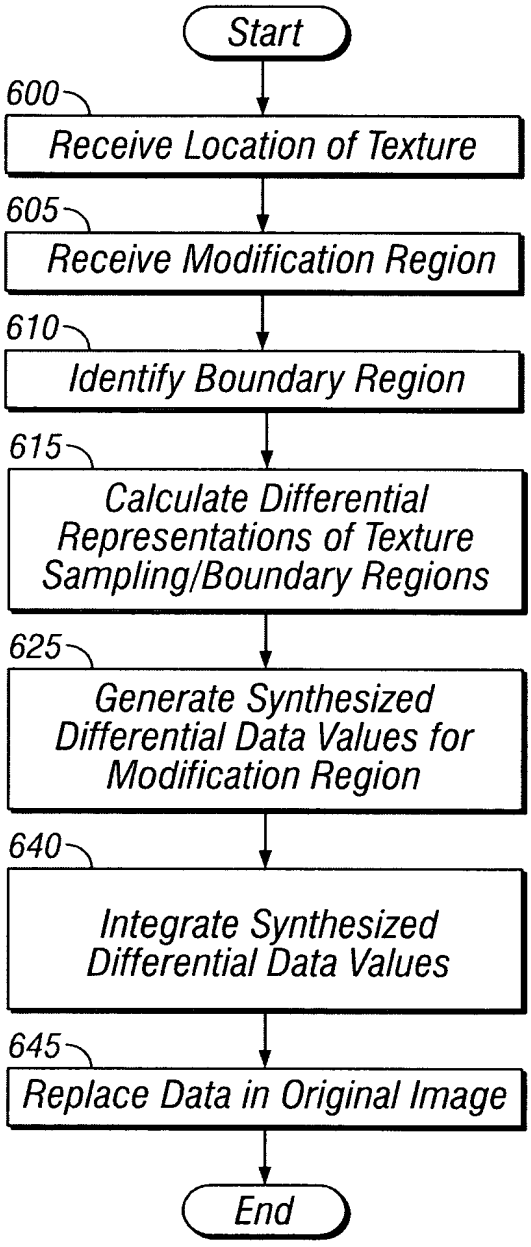
Start
600
Receive Location of Texture
605
Receive Modification Region
610
Identify Boundary Region
615
Calculate Differential Representations of Texture Sampling/Boundary Regions
625
Generate Synthesized Differential Data Values for Modification Region
640
Integrate Synthesized Differential Data Values
645
Replace Data in Original Image
End

FIG. 6

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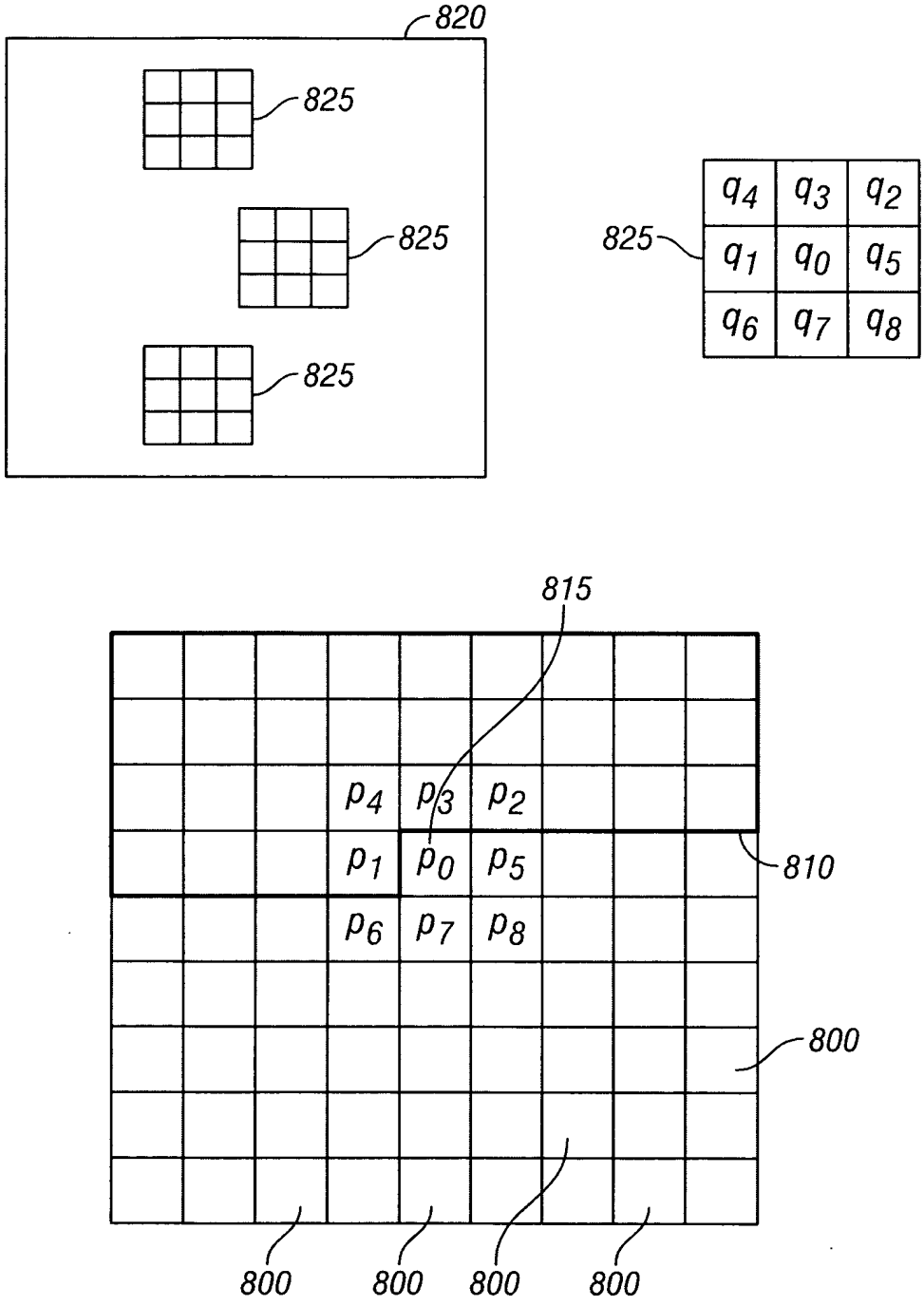
820
825
825
825
825
q_4 q_3 q_2
q_1 q_0 q_5
q_6 q_7 q_8
815
p_4 p_3 p_2
p_1 p_0 p_5
p_6 p_7 p_8
810
800
800
800
800
800

FIG. 8

BEST AVAILABLE COPY

FIG. 9A

BEST AVAILABLE COPY

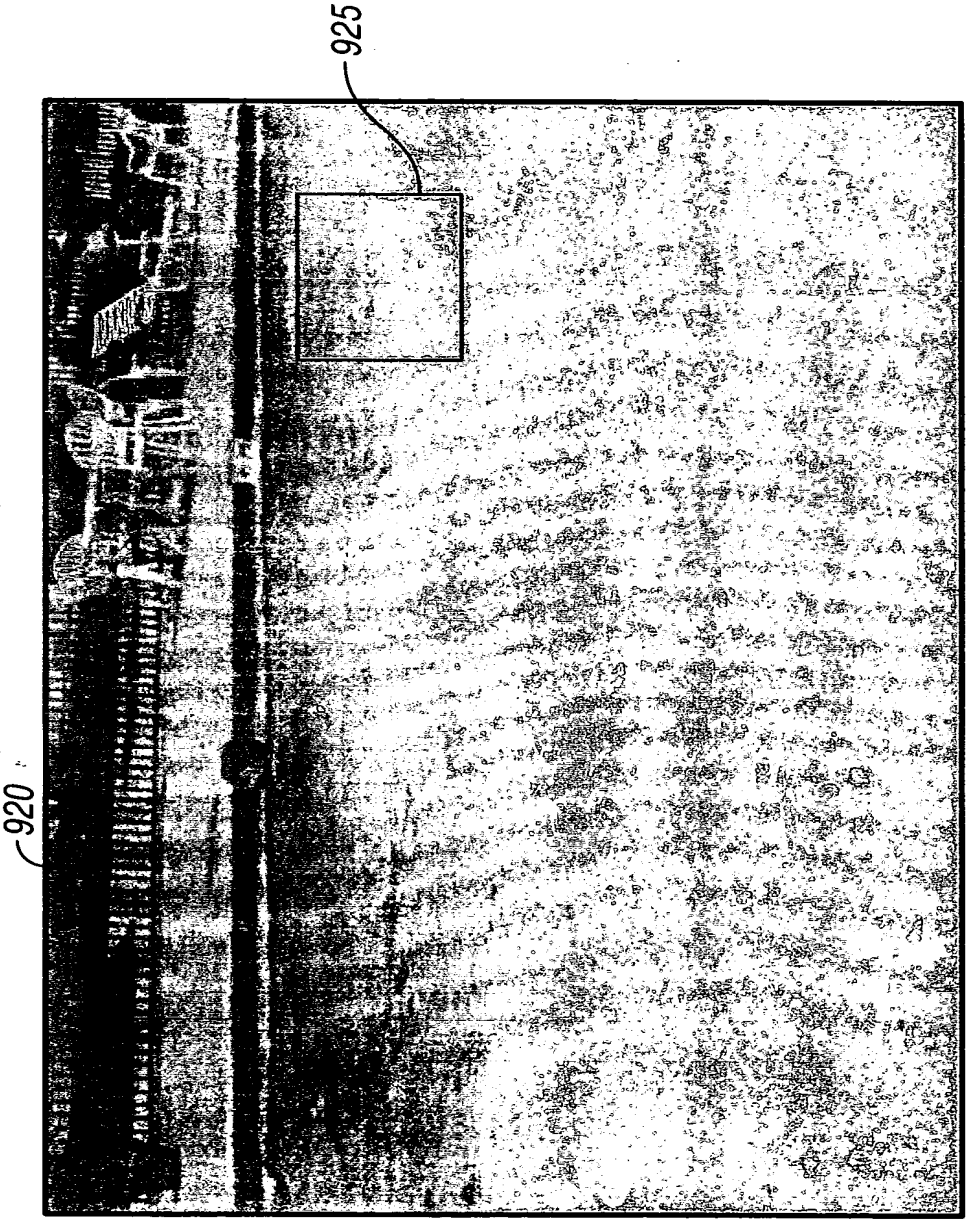

FIG. 9B

BEST AVAILABLE COPY

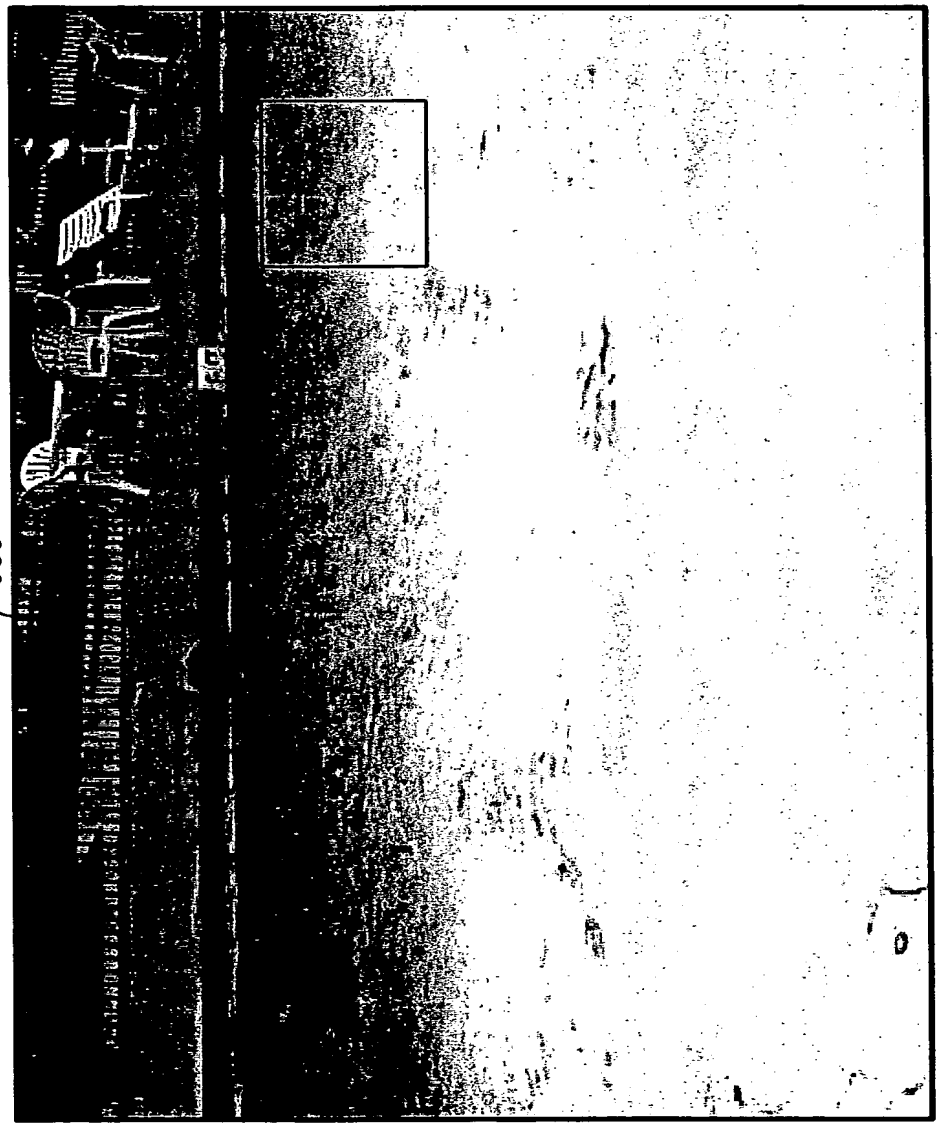

FIG. 9C

BEST AVAILABLE COPY

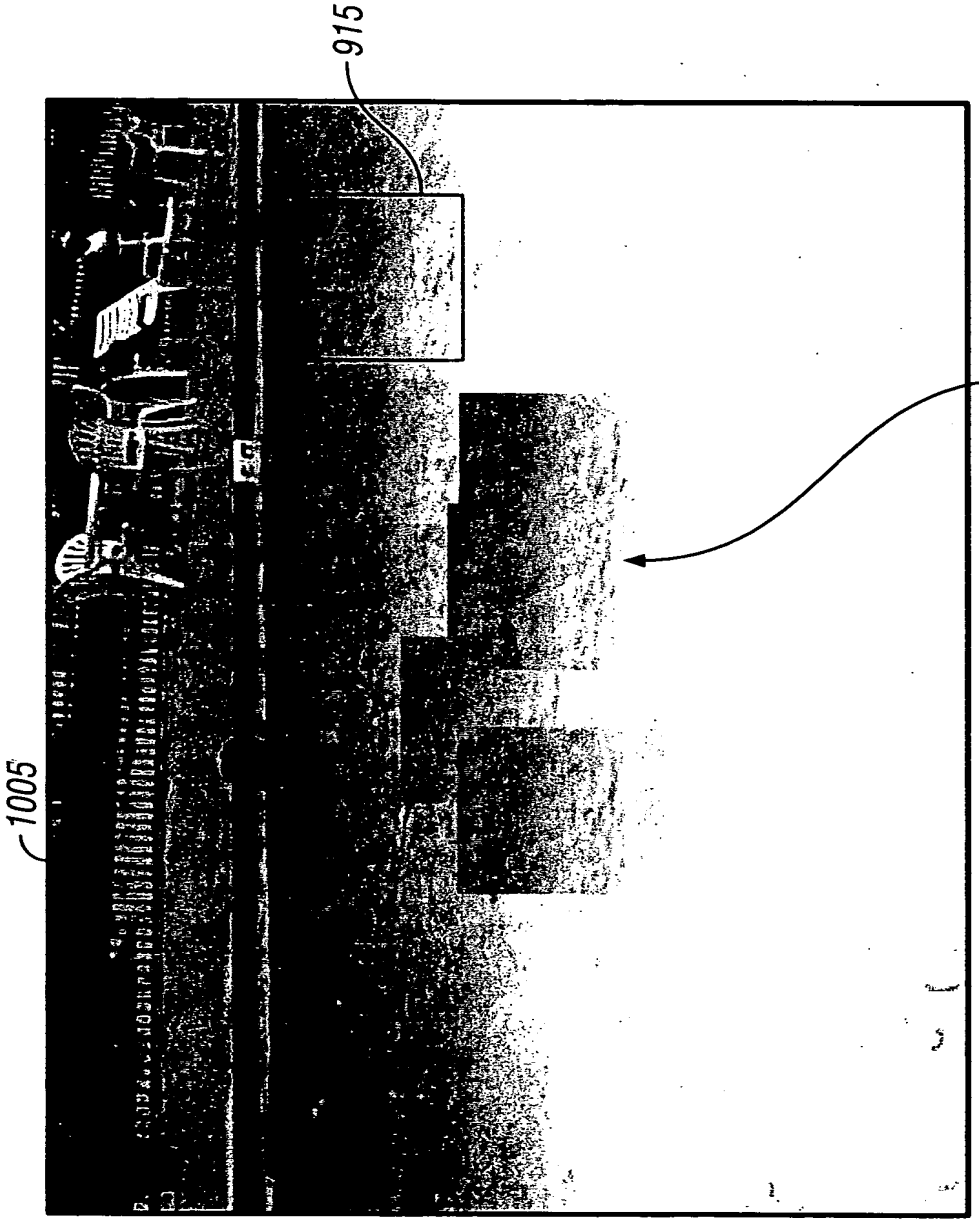

FIG. 10